

1161-05-155

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Augusta, GA 30904. *A note on Goldberg's conjecture of total chromatic numbers.*

Let  $G = (V(G), E(G))$  be a multigraph with maximum degree  $\Delta(G)$ , chromatic index  $\chi'(G)$  and total chromatic number  $\chi''(G)$ . The Total Coloring conjecture proposed by Behzad and Vizing, independently, states that  $\chi''(G) \leq \Delta(G) + \mu(G) + 1$  for a multigraph  $G$ , where  $\mu(G)$  is the multiplicity of  $G$ . Moreover, Goldberg conjectured that  $\chi''(G) = \chi'(G)$  if  $\chi'(G) \geq \Delta(G) + 3$  and noticed the conjecture holds when  $G$  is an edge-chromatic critical graph. In this note we show that  $\chi''(G) = \chi'(G)$  if  $\chi'(G) \geq \max\{\Delta(G) + 2, |V(G)| + 1\}$ . Consequently,  $\chi''(G) = \chi'(G)$  if  $\chi'(G) \geq \Delta(G) + 2$  and  $G$  has a spanning edge-chromatic critical subgraph. (Received August 15, 2020)